

CLAIMS

1. A switch for regulating the substrate potential of an integrated circuit comprising:

5 a first control input coupled to a first N-well bias supply line;

a second control input coupled to a substrate bias supply line;

a switched terminal coupled to a ground;

10 a switched terminal coupled to said substrate bias supply line; and

an output terminal coupled to a P-type substrate.

2. The switch of Claim 1, wherein said switch is
15 operable to electrically couple said P-type substrate to said ground when a bias voltage is present on said first N-well bias supply line.

3. The switch of Claim 1, wherein said switch is
20 operable to electrically couple said P-type substrate to said substrate bias supply line when a substrate bias voltage is present on said substrate bias supply line.

4. The switch of Claim 1, further comprising a second control input coupled to a second N-well bias supply line.

5. The switch of Claim 4, wherein said switch is
5 operable to electrically couple said P-type substrate to said ground when a bias voltage is present on said second N-well bias supply line.

6. The switch of Claim 4, wherein said switch is
10 operable to electrically couple said P-type substrate to said substrate bias supply line when a substrate bias voltage is present on said substrate bias supply line.

7. The switch of Claim 1, wherein said switch is
15 operable to electrically couple said P-type substrate to said substrate bias supply line when a substrate bias voltage is present on said substrate bias supply line and there is no bias voltage present on said N-well bias line.

20 8. The switch of Claim 1, wherein said switch is operable to electrically couple said P-type substrate to said ground when a substrate bias voltage is present on said

substrate bias supply line and there is no bias voltage present on said N-well bias line.

9. A switch for regulating the substrate potential of
5 an integrated circuit comprising:

a first control input coupled to a first N-well bias supply line;

a second control input coupled to a substrate bias supply line;

10 a switched terminal coupled to a ground;

a switched terminal coupled to a charge pump enable line; and

an output terminal coupled to a P-type substrate.

15 10. The switch of Claim 9, wherein said switch is operable to electrically couple said P-type substrate to said ground when a bias voltage is present on said first N-well bias supply line.

20 11. The switch of Claim 9, wherein said switch is operable to isolate said P-type substrate from ground when an enable signal is present on said charge pump enable line.

12. The switch of Claim 9, further comprising a second control input coupled to a second N-well bias supply line.

13. The switch of Claim 12, wherein said switch is
5 operable to electrically couple said P-type substrate to said ground when a bias voltage is present on said second N-well bias supply line.

14. The switch of Claim 12, wherein said switch is
10 operable to electrically isolate said P-type substrate from ground when an enable signal is present on said charge pump enable line.

15. An integrated circuit comprising:
15 a substrate,
a first complementary well disposed in said substrate;
a first bias supply line for providing a body-bias voltage coupled by a switch to said first well;
a second bias supply line for providing a second body-
20 bias voltage to said substrate coupled to said substrate by said switch; and

wherein said switch is operable to maintain the voltage of said substrate at a potential between ground and said

second body voltage by selectively coupling said substrate to ground or to said second bias supply line in response to the state of said first and second bias supply lines.

5 16. The integrated circuit of Claim 15, wherein said substrate is a P-type substrate and said well is an N-well.

17. The integrated circuit of Claim 15, wherein said substrate is an N-type substrate and said well is a P-well.

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18. The integrated circuit of Claim 15, wherein said switch is a single-pole, double throw (SPDT) switch.

19. The integrated circuit of Claim 16, further
15 comprising:

 a second complementary well disposed in said substrate;
 a third bias supply line for providing a body-bias voltage coupled by a switch to said second well; and

 wherein said switch is operable to maintain the voltage
20 of said substrate at a potential between ground and said second body voltage by selectively coupling said substrate to ground or to said second bias supply line in response to the state of said first, second, and third bias supply lines.

20. The integrated circuit of Claim 19, wherein said substrate is a P-type substrate and said first and second wells are N-wells.